

NASA TECH BRIEF

Ames Research Center



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Electrodes for Sealed Secondary Batteries

The problem:

To improve the performance of electrodes in miniature, sealed, alkaline storage batteries.

The solution:

Self-supporting membrane electrode structures in which active ingredients and graphite (to provide conduction) are incorporated in a polymeric matrix.

How it's done:

Membrane films are cast from slurries consisting of a mixture of nickel hydroxide (for anodes) or cadmium hydroxide (for cathodes), graphite, dimethylformamide, and a solution of poly(vinylidene fluoride) in dimethylacetamide. The cast film is allowed to dry for a short period of time, and then coagulated into a porous form by immersion in water. The finished film is 0.7 to 0.8 mm thick.

Sealed secondary cells are fabricated by wrapping the dry electrodes and a nickel screen (for current collection) with a suitable fabric separator. The assembly is wrapped with thin polytetrafluoroethylene tape and dipped in a solution of poly(vinyl chloride)

in methylethylketone. When dry, the cell is filled by vacuum impregnation and the fill-hole is sealed.

Notes:

1. Cells constructed as described are flexible; they can be shaped into some convenient form and then potted with a thermosetting resin.
2. Requests for additional information may be directed to:

Technology Utilization Officer
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Moffett Field, California 94035
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Patent status:

No patent action is contemplated by NASA.

Source: D. B. Boies and
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